

Coleophora fuscicornis Zeller, 1847 (Lepidoptera:
Coleophoridae), a Species New to Britain, with
an Account of its Life Cycle

By A. M. EMMET¹ and R. W. J. UFFEN²

Summary

Coleophora fuscicornis Zell. is added to the British List from Essex. The moth is described and its genitalia are figured and compared with *C. trifolii* Curt. The larva is shown to make its case from a seedpod of *Vicia tetrasperma* (L.) Schreb. The larva is compared with that of *C. trifolii*.

Discovery and determination

by A. M. EMMET

On the 26th of May, 1973, I paid a visit to the Essex Naturalists' Trust reserve at Fingringhoe Wick for the purpose of recording microlepidoptera. On a patch of rather sparsely vegetated ground I netted a large Coleophorid, then to find that I had unwittingly secured two specimens at the single stroke. At first sight they appeared to be *Coleophora trifolii* Curtis (*frischella* sensu auct.) and I was about to release them, when two considerations made me change my mind: first, it was a month too early for *trifolii*, and secondly, there was no sign of its foodplant, melilot; so I took the two moths home, after noticing that there were others flying in the same area.

A comparison between the two moths and the *trifolii* in my cabinet quickly showed that they were distinct. The apical area of the forewings almost completely lacked the bronzy reflections so conspicuous in *trifolii*, the antennae did not have pale tips and the eye was fringed posteriorly with orange scales. The new moth also seemed to be marginally bigger.

I therefore invited Mr Raymond Uffen, a leading authority on the Coleophoridae, to pay a visit and give an opinion on what appeared to me to be a species new to Britain. He agreed that the species was new. Both the moths were males and a genitalia preparation made from one of them showed further that it was a species not figured by Toll (1953 and 1962).

On the next day (the 2nd of June), we went to Fingringhoe Wick to study the species in the field, and found a number of specimens flying in the sunshine over the same patch of ground. We observed their movements carefully, hoping to get an indication of the foodplant. This we expected to be one of the Papilionaceae, in conformity with the feeding habits of the group to which the new species appeared to belong. We noticed that there was plenty of bird's-foot trefoil (*Lotus corniculatus* Linn.) and narrow-leaved vetch (*Vicia angustifolia* Linn.) in the vicinity and that it was the latter which seemed to be of more interest to the moths. We also captured a few moths, but were careful not to take too many of what was possibly a rare species.

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My next task was to visit the British Museum (Natural History) and to try to identify the moth. Dr J. D. Bradley gave his assistance and we found it to be *Coleophora fuscicornis* Zeller. A male genitalia preparation made from a continental specimen was already available and a comparison between this and Mr Uffen's slide of the Fingringhoe moth placed the determination beyond doubt. We further ascertained that *fuscicornis* has a predominantly Mediterranean distribution extending from Spain to Israel. The type male was taken at Carajasu, Asia Minor, in a high mountain valley on 11th April, 1842. Lhomme (1951) gives five French localities: La Grave, Hautes-Alpes (P. Chrétien); Crus, Ardeche (P. Chrétien); Ronce-les-Bains, Charente-Maritime (Lhomme, det. P. Chrétien); Nohant, Indre (Sand); Cabrerets, Lot (P. Chrétien); Douelle, Lot (Lhomme)—all 400 miles or more south of Fingringhoe. The life history of *C. fuscicornis* was still unknown.

Here was a challenge. Accordingly on the 4th July I returned to Fingringhoe Wick and on the very first plant of what I thought was *Vicia angustifolia*, literally within seconds, I found what I was looking for—the larval case of *fuscicornis*.

The larva starts by eating out the contents of a small seedpod less than half an inch long. It then severs the pod from the plant and uses it as a portable case without further visible embellishment. It fastens the case to a second pod, usually at the tip and in alignment with it. Then, using the case as a basis of operations, it enters the new pod and devours its seeds. If, as is likely, its growth is then still not complete, it repeats the process with a third or fourth pod. All this time, the case is turning yellow-brown, but the ripening pods to which it is attached are bright green. This contrast in colour betrays the presence of the case: what one sees is a brown pod "growing" out of a green one. A description of the larva and a more detailed account of the case will be found in the section contributed by Raymond Uffen. As soon as I had learnt what to look for, I readily found as many cases as I needed. Some of these I took to Mr Uffen. The remainder I had to leave potted up in the garden and unobserved, as two days later I crossed to Ireland. On my return I found that a cat must have walked on the nylon cover of the pot, rupturing it, and all the living cases had walked away. I was glad enough to find that there were three cases containing dead larvae for study.

As time passed, Raymond Uffen had second thoughts about the identity of the foodplant. The larva of *fuscicornis* can utilise only a relatively small pod as its portable case, and those of *angustifolia*, even in its var. *bobartii* (E. Forst.) Koch (now known as *V. angustifolia* ssp. *angustifolia*) are clearly too big. We therefore consulted Mr Stewart Linsell, the warden of Fingringhoe Wick, about the vetches of his reserve, and he put us in touch with Mr H. J. Killick, who is an authority on the family. Fortunately Uffen still had some of the original feeding material available for Mr Killick to examine, and he pronounced that it consisted of a mixture of *Vicia angustifolia* and the smooth

tare (*V. tetrasperma* (L.) Schreb.); it was on the seeds of the latter that the larvae had been feeding. Furthermore, the distribution abroad of *tetrasperma* corresponded very well with that of *Coleophora fuscicornis*. It is easy to see how we made our mistake: we had failed to appreciate that there were two vetches growing together, and had made a correct determination, but of the wrong half of the material. In retrospect, I realise that even without that cat's interference I would have failed to rear *fuscicornis*, since I had selected large pods to sate the larval appetite during my absence! However, Mr J. M. Chalmers-Hunt has since reared a single male *fuscicornis* on 3rd June 1975; also a hymenopterous parasite (Chalmers-Hunt, 1975).

The moth was again observed on the wing in late May and early June 1974 and its cases were found once more in early July. There is no doubt that it is well established at Fingringhoe Wick. It must, however, be pointed out that collecting on the reserve, which has a resident warden, is not allowed without a written permit and normally this is granted only for the purpose of recording species. Those who wish to add *fuscicornis* to their collections are advised to search for it on similar terrain in the neighbouring part of Essex, or indeed in any place where *Vicia tetrasperma* grows plentifully. Jermyn (1974) describes the plant as widespread throughout the county.

In conclusion I would like to thank the officers of the Essex Naturalists' Trust (of which I am a member), for letting me have a permit to make records on their reserves and for allowing me to reveal the name of the first British locality for *Coleophora fuscicornis*. At the same time I extend my thanks to the warden of the reserve for his help and to Mr H. J. Killick and Dr J. D. Bradley for their part in determining the foodplant and the moth. Three specimens have been placed in the National Collection at the British Museum (Natural History).

Description of case, larva and imago

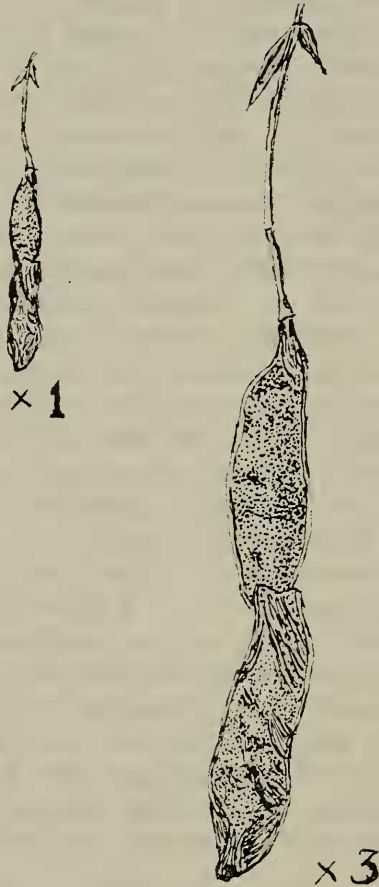
by R. W. J. UFFEN

Maitland Emmet has already described how we overlooked the insignificantly-flowered *Vicia tetrasperma*, the true foodplant, when the moths were on the wing and only much later, after I realised that the pods upon which the larvae had been feeding did not fit those of *V. angustifolia*, the conspicuous species in flower, did Mr Killick kindly set our botany to rights. The other vetches available at Fingringhoe were all in the wrong state of development for the larvae to feed on them.

The larva of *C. fuscicornis* consumes the green seed in one pod, voiding its frass through a slit in the distal end, then cuts the pod from its stalk and uses it as a portable dwelling which is attached to the side, or more commonly the end, of another pod. The seeds in the second pod are consumed rather little if they are already ripening, and the larva moves on to another pod. If the seeds are still green, they are consumed completely and a certain amount of frass, with very little silk, is left behind.

More pods may be attacked, according to the success of the attack on the seeds within each. Seedpods at Fingringhoe are 10-12 mm. long and contain up to four seeds.

We are indebted to Mr S. N. A. Jacobs for the accompanying drawing of cases in their characteristic situation (fig. 1).



Coleophora fuscicornis Zeller.

Essex, J. M. Chalmers-Hunt leg. 9.vii.1974 del. S.N.A.J. 16.viii.1975.

Fig. 1. Case of *Coleophora fuscicornis* on *Vicia tetrasperma*.

Cases examined in January had been lined with a thick, brown felt of reinforced silk having three valves about 2.5 mm. inside the slit end of the pod. There was a thin lining of smooth, white silk within the tough brown layer. The oral end had by this time been fashioned into a circular opening and plugged with a loose felt of brown silk. The larvae were facing the valves ready for pupation.

Old pods were examined to determine details of the feeding. In one that had probably been destined to become a case, a minute head capsule, deemed to be of the first instar, was found, but lost before it could be measured. Head capsules of two further instars were readily to be found in or around partly-emptied pods. These are 0.34-0.36 mm. wide and 0.5-0.6 mm.

wide. Mature larvae have heads 0.7-0.8 mm. wide. It thus appears that there are four instars, as with other *Coleophora* species that have been subjected to close scrutiny, and that the first moult takes place within the pod that becomes the case.

Coleophorid larvae are case-bearers, so that the whole weight of the animal and its dwelling is borne by the thoracic legs. In addition to the usual prothoracic shield, there are other reinforced, pigmented sclerites on the dorsum and around the spiracular area of the mesothorax and sometimes the metathorax of these larvae. *C. fuscicornis* belongs to that large part of the genus *Coleophora* in which the dorsal metathoracic sclerites form a pair of spots on each side of the midline. The anterior dorsal lobes are always well separated, but the posterior lobe is continuous across the midline, but bears two triangular spots with their bases facing each other. Amongst these insects in the British fauna, the *trifolii* group is distinguished by having locally two different densities of pigment on the prothoracic shield. The shield is light brown (its anterior margin may be almost unpigmented), with a posterior band or pair of spots of blackish-brown on each side, which is also the colour of the other thoracic markings (fig. 2).

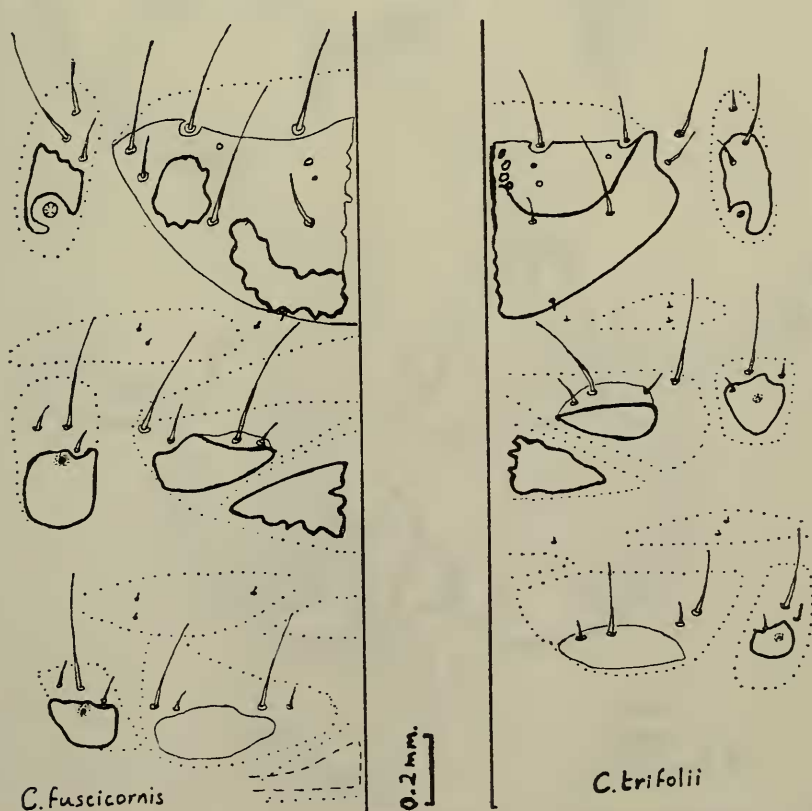


Fig. 2. Left side of thorax of *C. fuscicornis* and right side of thorax of *C. trifolii* larva. Heavy lines denote areas of dark brown pigmentations. Dotted lines indicate folds of the cuticle. Spiracular scars are visible on the meso- and metathoracic segments.

C. trifolii Curtis larvae have a continuous dark band along each side of the hind margin of the shield, whilst *C. fuscicornis* larvae have two spots on each half of the hind margin. The four abdominal prolegs of one side total a mean of 42 crochets between them in *C. trifolii* (5 larvae) and 55 in *C. fuscicornis* (4 larvae), but as the range was from 39-49 in *trifolii* and 43-70 in *fuscicornis* not every larva can be distinguished by its feet.

Comparison with the clover-feeding members of the group, *C. spissicornis* Haw. and *C. deauratella* Lienig & Zell. are to be found in a further paper by R.W.J.U.

Imago

Male: wingspan 17-19 mm. Head and thorax dark bronzy fuscous. Antennae with scape rough-scaled beneath. Labial palpi with second joint thickened with scales, terminal joint as long as second. A fringe of orange scales behind and below the eye. Forewings shining bronzy grey-green with faint coppery reflections; cilia concolorous with the wing, shading to grey on the tornus. Hindwings and cilia grey. The male genitalia are characterised by a long, J-shaped, spurred seta of unusually large diameter, but thin wall, projecting from the costa mid-way between the tegumen and the base of the clasper (fig. 3).

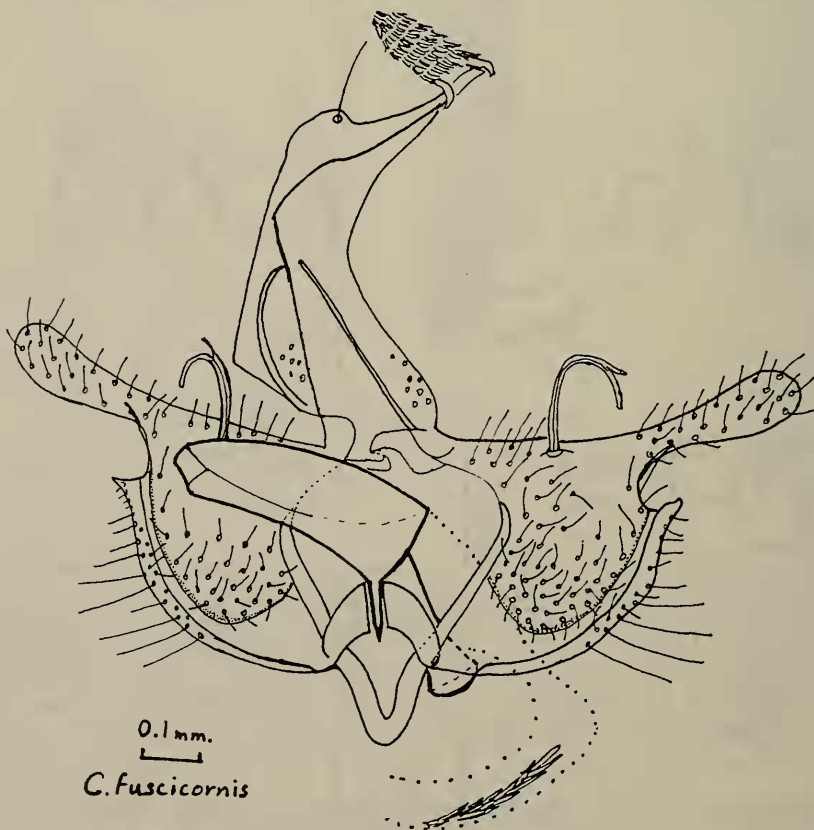


Fig. 3. Male genitalia of *C. fuscicornis*.

Female: wingspan 14-15 mm. Antennae with base of flagellum somewhat thickened with dark bronzy scales. Hindwings rather dark grey, otherwise as male. Tergite 8 bears a central T-shaped

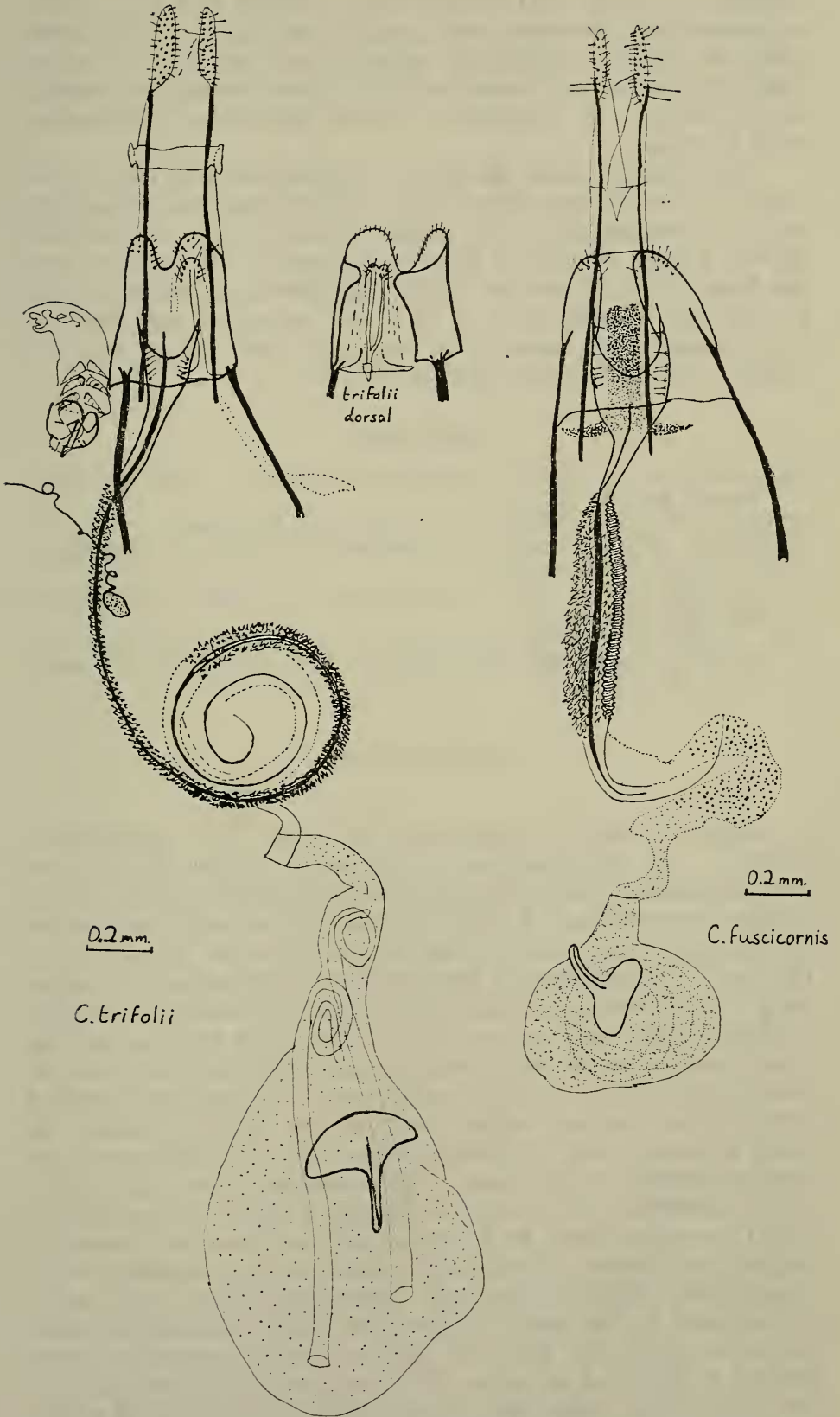


Fig. 4. Female genitalia of *C. trifolii* (left, with dorsal view of 8th segment at inset) and *C. fusicornis* (right).

sclerite. It is broad and without setae, whereas that in *C. trifolii* is narrow and furnished with apical setae (fig. 4). The narrow lobes on the last abdominal segment and the zone of rough cuticle in the ductus bursae near the corpus bursae are reminiscent of those in *C. deauratella*, but the signum has broad wings as in *C. trifolii*.

The female *trifolii* figured for comparison had laid all but one or two of its eggs and still retained the remains of apparently two spermatophores in its bursa copulatrix. As the drawing shows, a fully developed larva was found in the oviduct near the base of the ovipositor. Whilst larviparous coleophorids are known, this appears only to be a case of an old egg fertilised but retained by a female that had completed laying eggs and must have lived for some time afterwards.

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EREBIA SEROTINA DESCIMON & DE LESSE 1953: A POSSIBLE HYBRID. — In 1967, on leaving Cauterets in the Pyrenees on 25th September after our third fruitless attempt to find *Erebia serotina*, my wife and I made an observation that is relevant to its taxonomic status, and should have been put on record earlier. On the Col d'Aubisque, a few hundred yards before the beginning of the descent to Les Eaux Bonnes, I noticed a solitary *Erebia* in flight. A long chase led to its capture and the surprise that it was a rather worn male *Erebia epiphron*, long past its normal flight time. No more were seen; but about two hundred yards further on, in a rather damp hollow by the roadside, we came across a colony of *Erebia pronoe*, mostly rather worn and mostly females. In the latest French edition of the *Field Guide to the Butterflies of Europe* M. Rougeot makes the suggestion that *E. serotina* could be a hybrid between these two species, a suggestion hitherto discounted because of the normally wide separation of their flight periods. That cross pairings could occur is indicated by this single observation. Such occurrences would be facilitated by the fact that the two species occupy the same habitat at the same elevation. The fact that all the specimens so far obtained are males also strongly suggests their hybrid origin. — N. D. RILEY, c/o Dept. of Entomology, British Museum (N.H.) London, S.W.7.